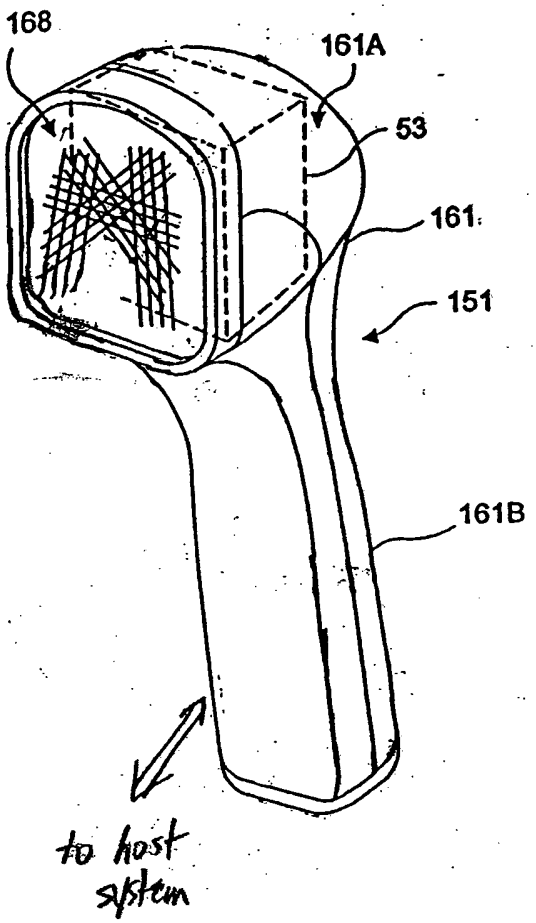


FIG. 1

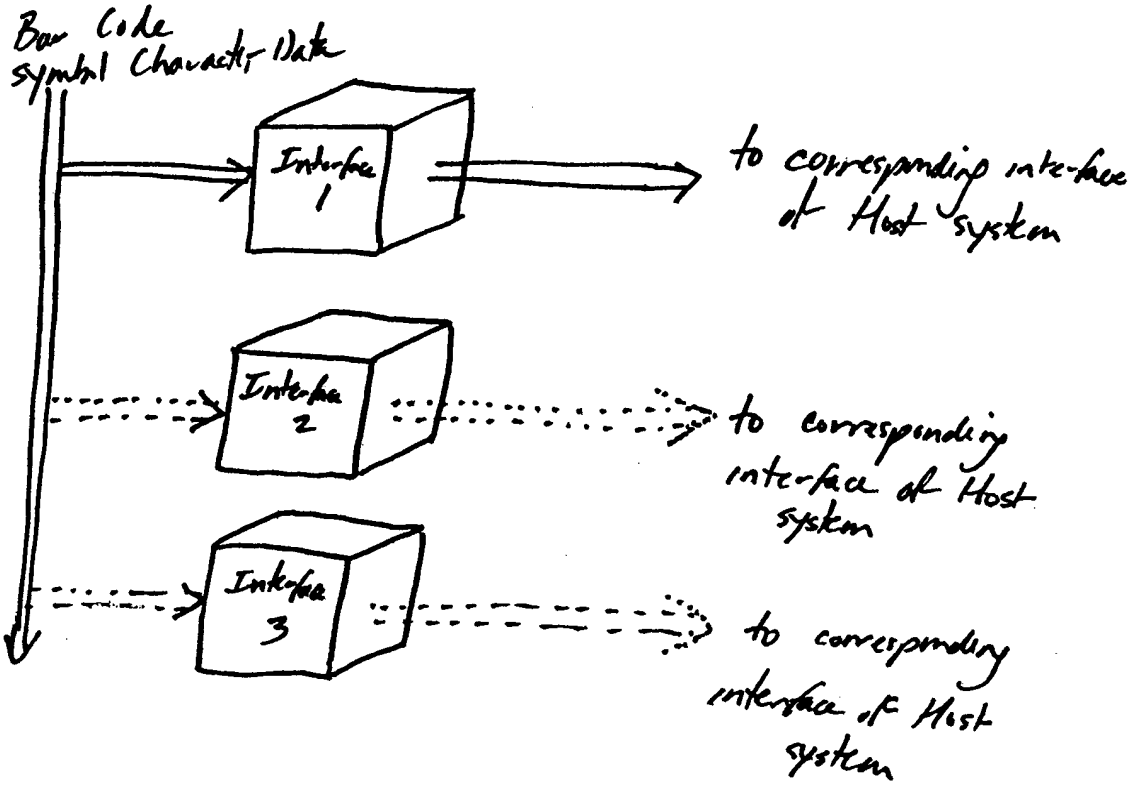

Bar Code
Symbol Character Data
Interface 1
to corresponding interface of Host system
Interface 2
to corresponding interface of Host system
Interface 3
to corresponding interface of Host system

FIG. 2

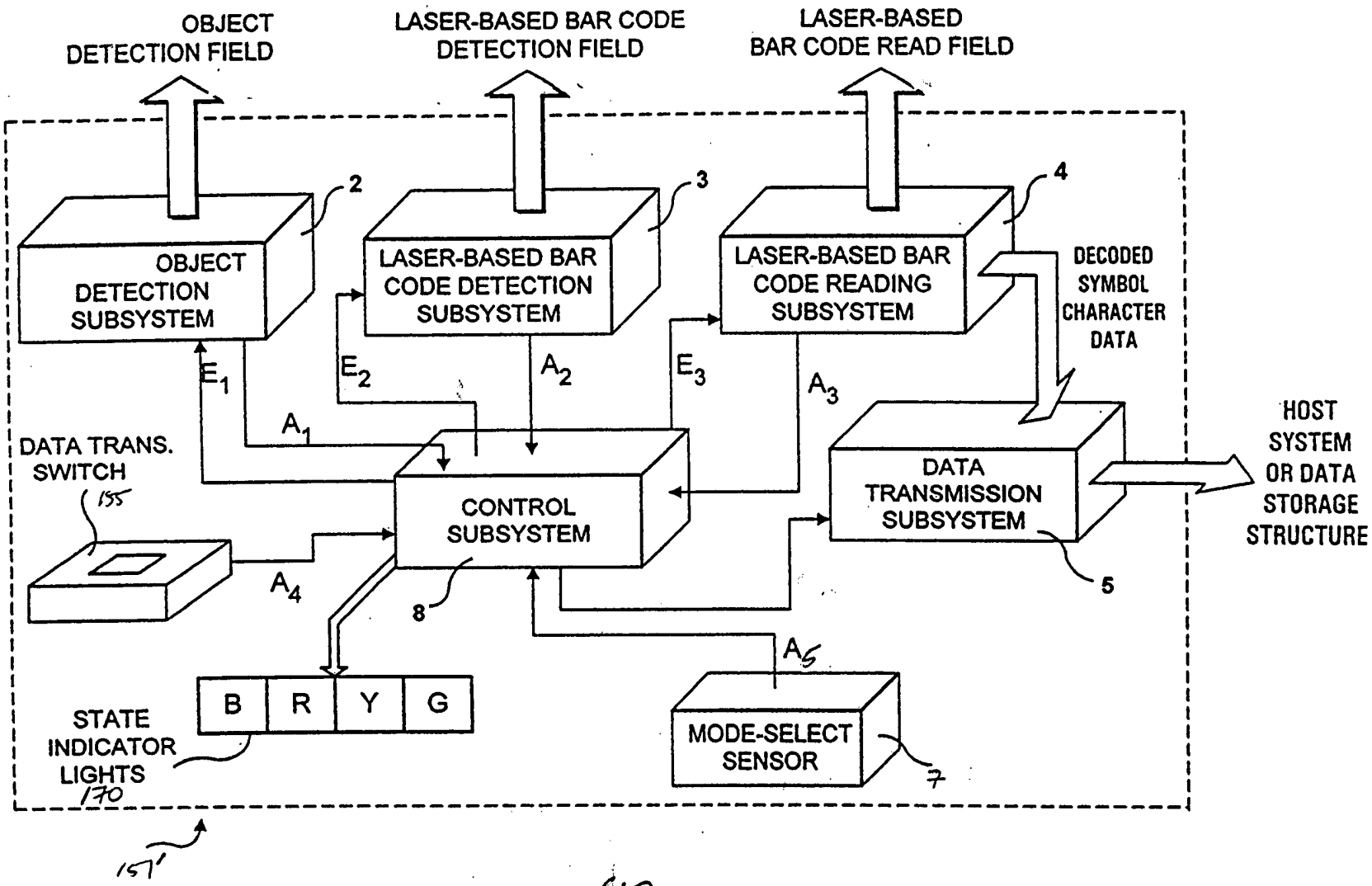

OBJECT DETECTION FIELD
LASER-BASED BAR CODE DETECTION FIELD
LASER-BASED BAR CODE READ FIELD
OBJECT DETECTION SUBSYSTEM
2
LASER-BASED BAR CODE DETECTION SUBSYSTEM
3
LASER-BASED BAR CODE READING SUBSYSTEM
4
DECODED SYMBOL CHARACTER DATA
E1
E2
A2
E3
A3
A1
DATA TRANS. SWITCH
155
CONTROL SUBSYSTEM
DATA TRANSMISSION SUBSYSTEM
HOST SYSTEM OR DATA STORAGE STRUCTURE
A4
8
5
A5
B
R
Y
G
STATE INDICATOR LIGHTS
170
MODE-SELECT SENSOR
7
157'

FIG. 3

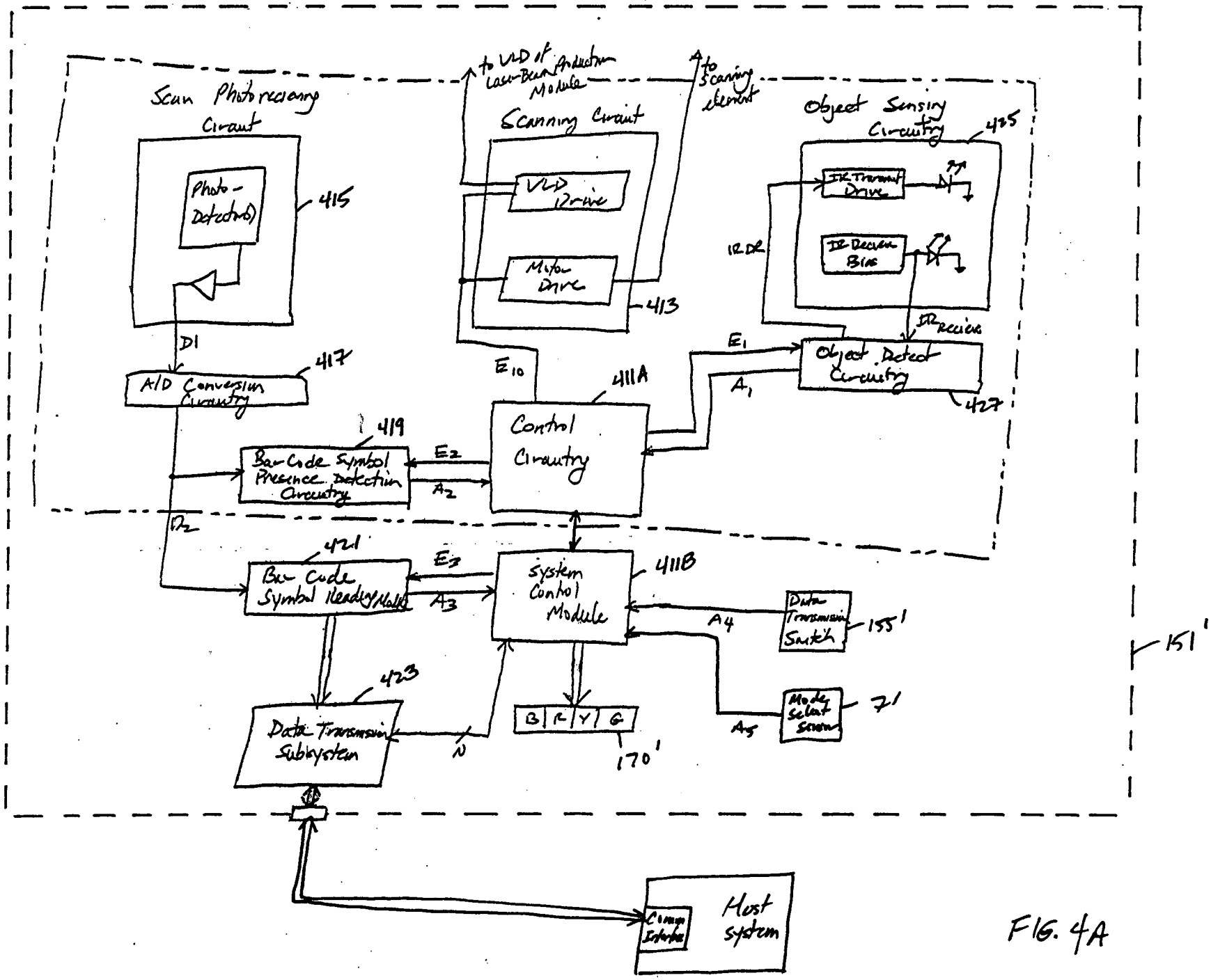

Scan Photoreceiving Circuit
Photo-Detector(s)
415
to VLD & Photodetection Module
to Scanning Element
Scanning Circuit
VLD Drive
Motor Drive
413
Object Sensing Circuitry
425
IR Transmit Drive
IR Receive Bias
IR Receive
D1
417
A/D Conversion Circuitry
E10
411A
Control Circuitry
E1
A1
Object Detect Circuitry
427
419
Bar Code Symbol Presence Detection Circuitry
E2
A2
D2
421
Bar Code Symbol Reading Module
E3
A3
System Control Module
411B
A4
Data Transmission Switch
155'
151'
423
Data Transmission Subsystem
N
B R Y G
170'
Mode Select Switch
71
A5
Comm Interface
Host system

FIG. 4A

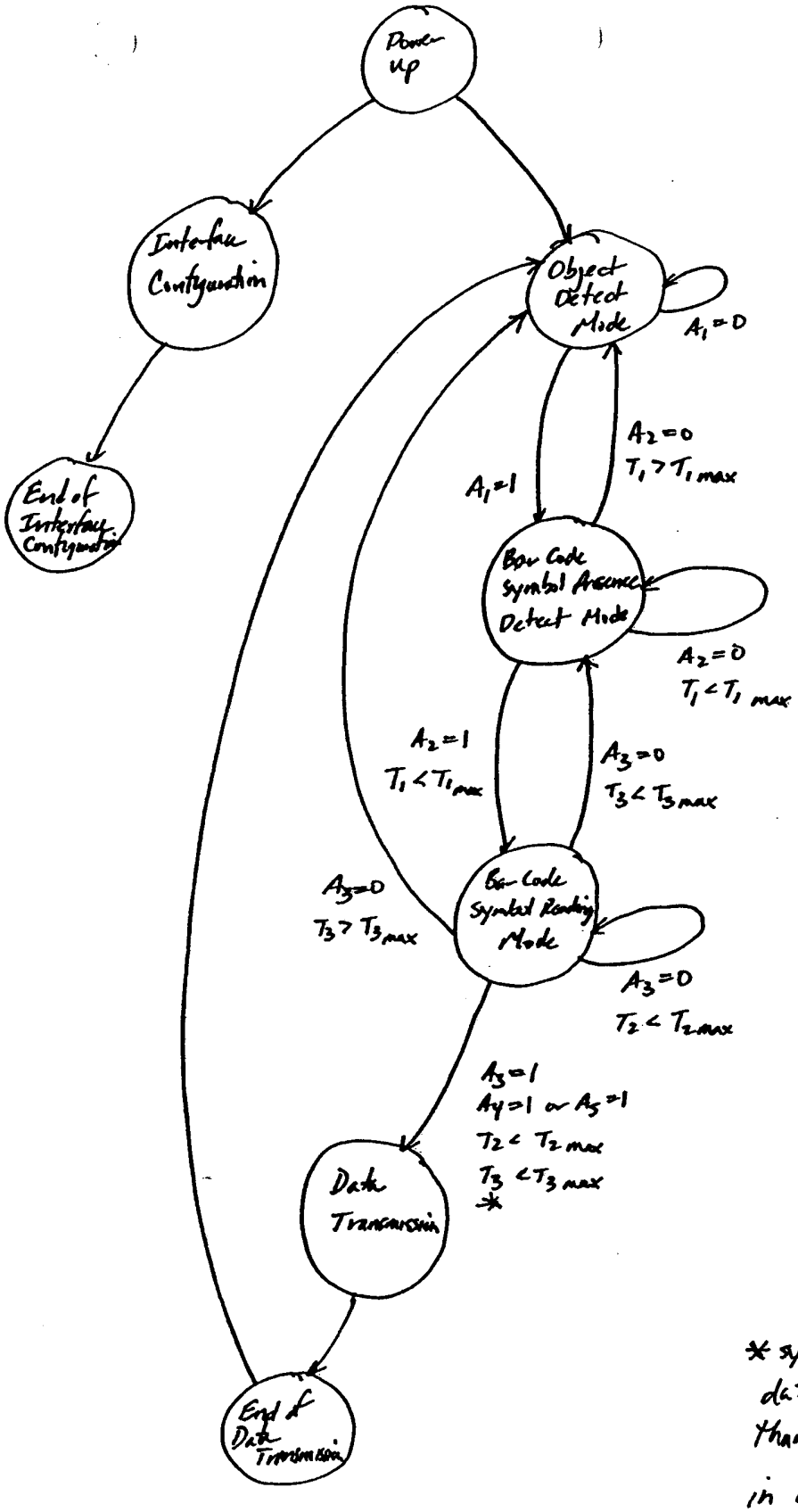


FIG. 4B

* symbol character data is different than data element in decoded symbol data buffer

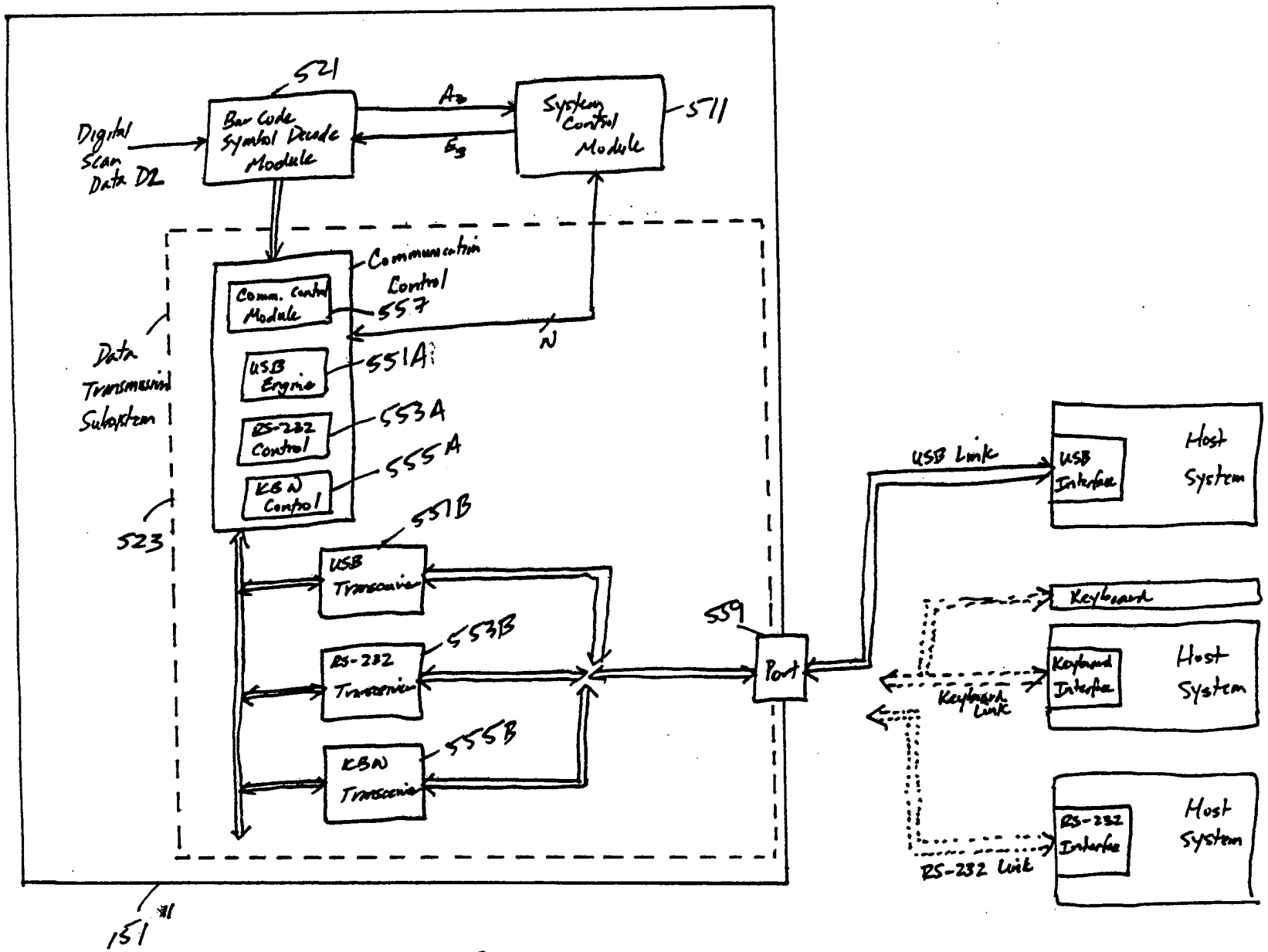

521
Digital Scan Data D2
Bar Code Symbol Decode Module
A3
B3
System Control Module
511
Communication Control
Comm. Control Module
557
N
Data Transmission Subsystem
USB Engine
551A
RS-232 Control
553A
KBW Control
555A
523
551B
USB Transceiver
553B
RS-232 Transceiver
555B
KBW Transceiver
559
Port
USB Link
USB Interface
Host System
Keyboard
Keyboard Interface
Keyboard Link
Host System
RS-232 Interface
RS-232 Link
Host System
151

Fig. 5

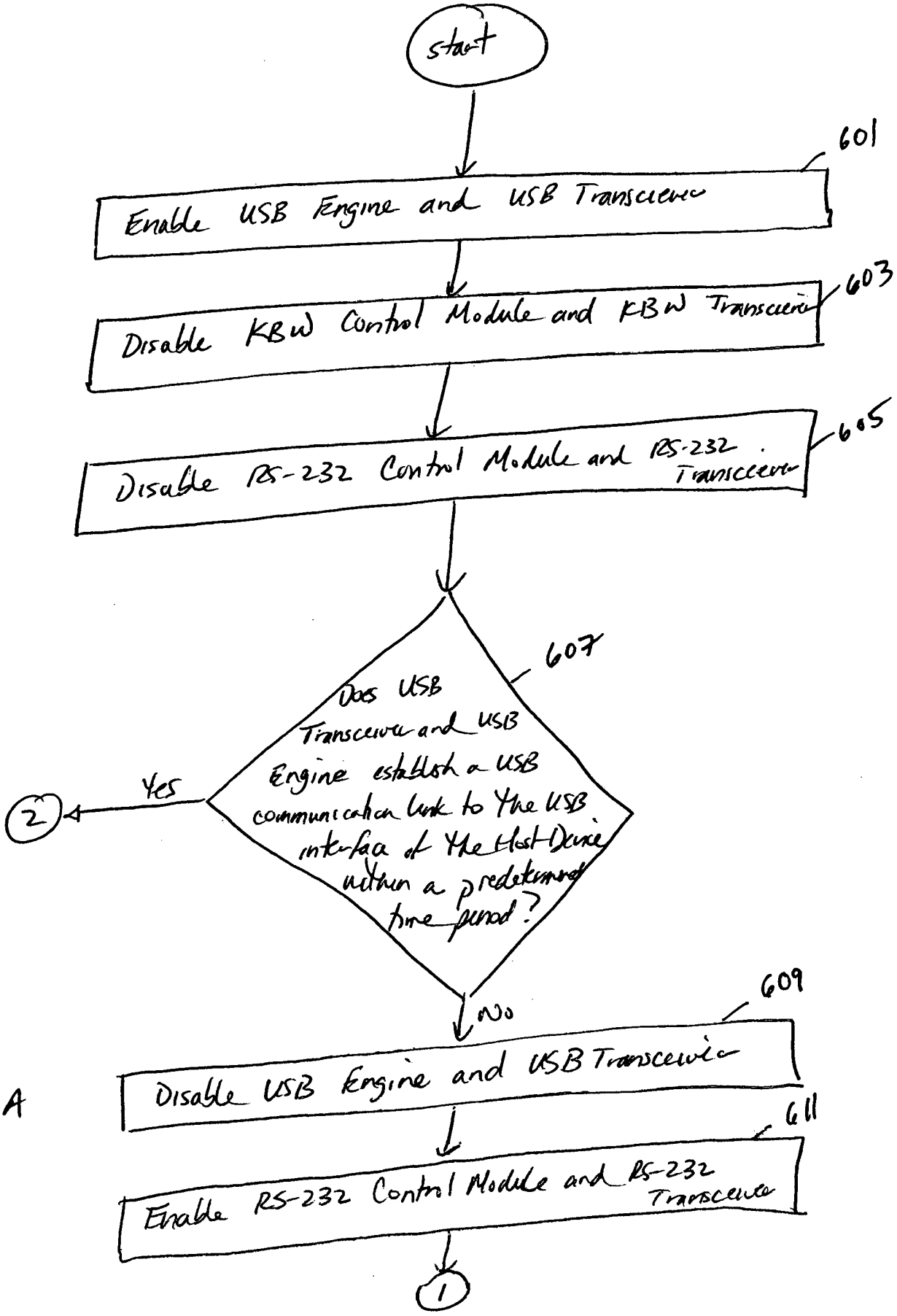

start
601
Enable USB Engine and USB Transceiver
603
Disable KBW Control Module and KBW Transceiver
605
Disable RS-232 Control Module and RS-232 Transceiver
607
Does USB Transceiver and USB Engine establish a USB communication link to the USB interface of the Host Device within a predetermined time period?
Yes
2
No
609
Disable USB Engine and USB Transceiver
611
Enable RS-232 Control Module and RS-232 Transceiver
1

FIG. 6A

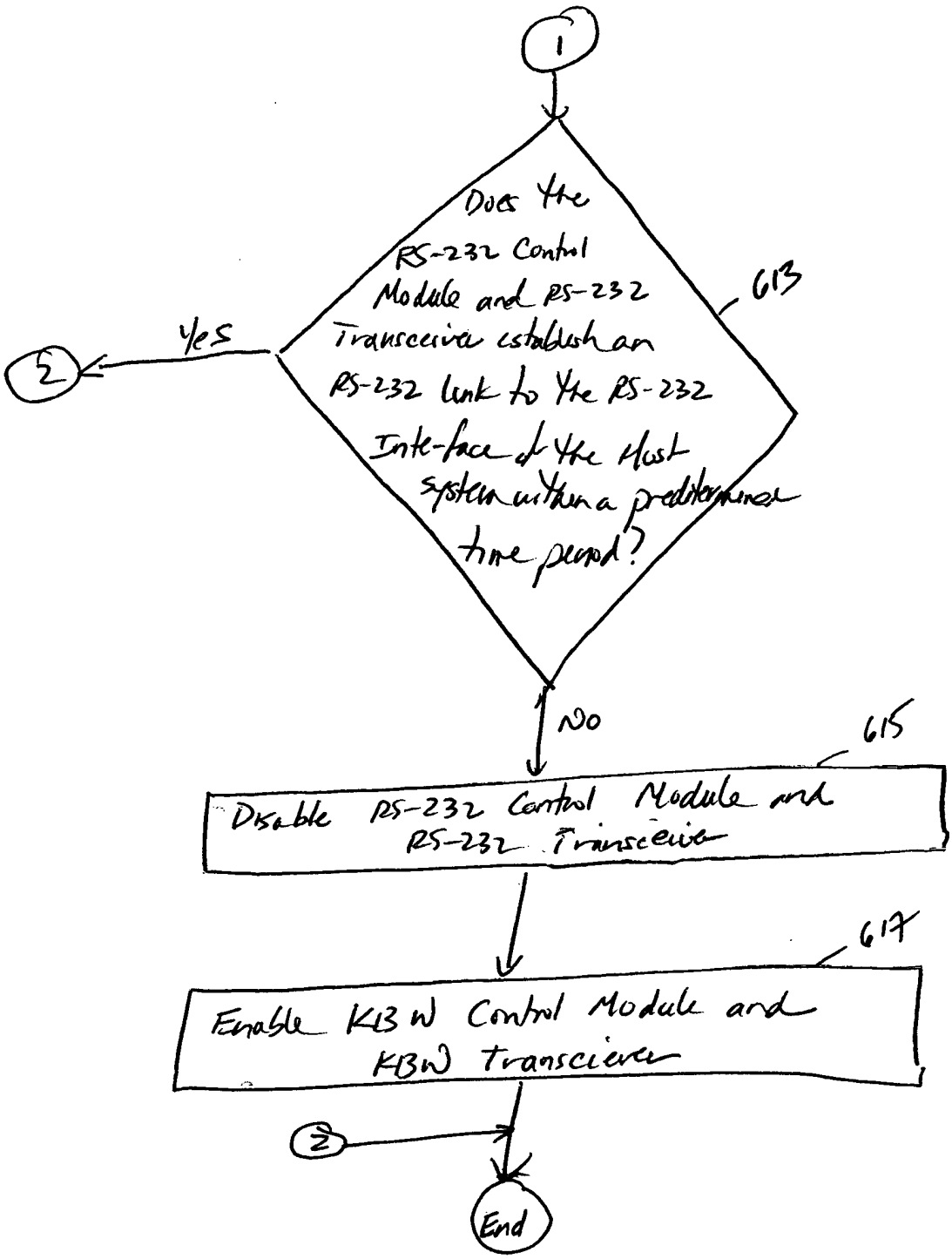

1
Does the RS-232 Control Module and RS-232 Transceiver establish an RS-232 link to the RS-232 Interface of the Host system within a predetermined time period?
613
Yes
2
No
615
Disable RS-232 Control Module and RS-232 Transceiver
617
Enable KBW Control Module and KBW Transciever
2
End

FIG. 6B

RS-232 waveform

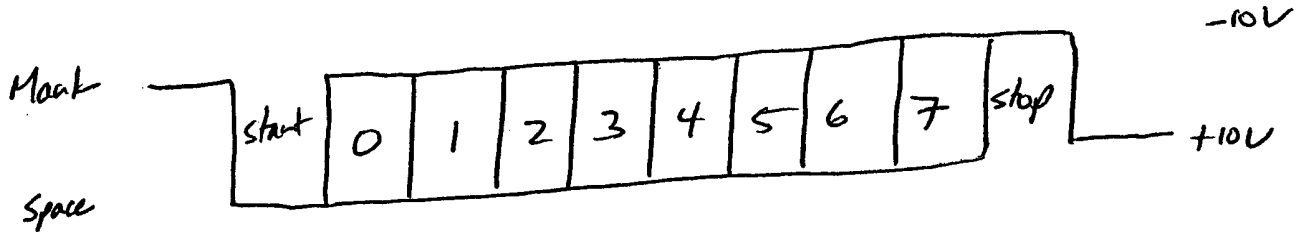


FIG. 7

Keyboard to Host Waveform

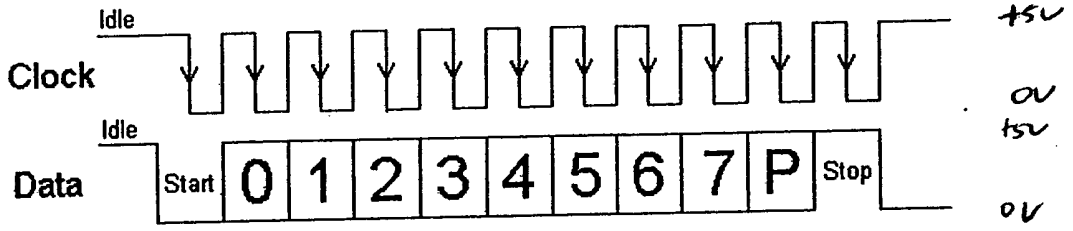


FIG. 8A

Host to Keyboard Waveform

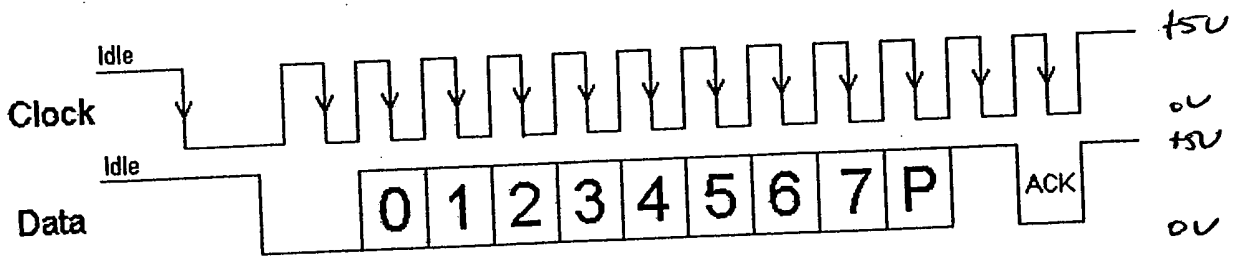
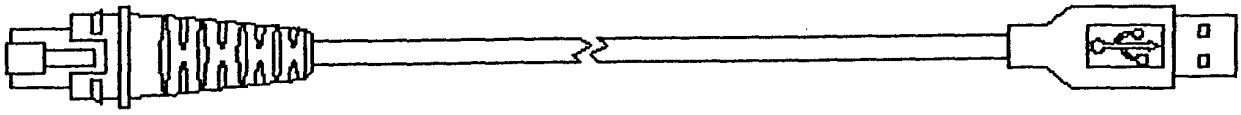


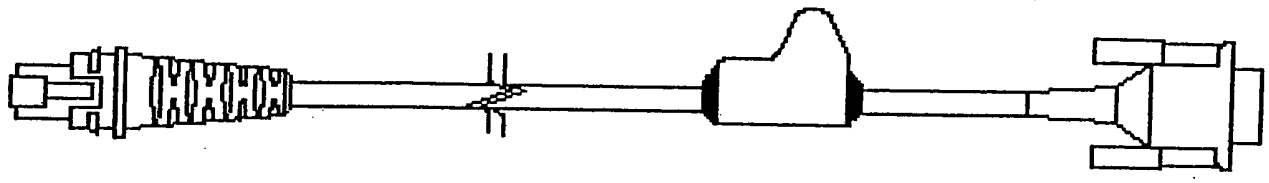
FIG. 8B



10-Pin Connector (USB)	
Pin	**Function**
1	Ground
2	D-
3	D+
4	No Connection
5	No Connection
6	No Connection
7	PC+5V/V_USB
8	No Connection
9	No Connection
10	Shield Ground

USB Cable Connector	
Pin	**Function**
1	PC+5V/V_USB
2	D-
3	D+
4	Ground
5	Shield Ground

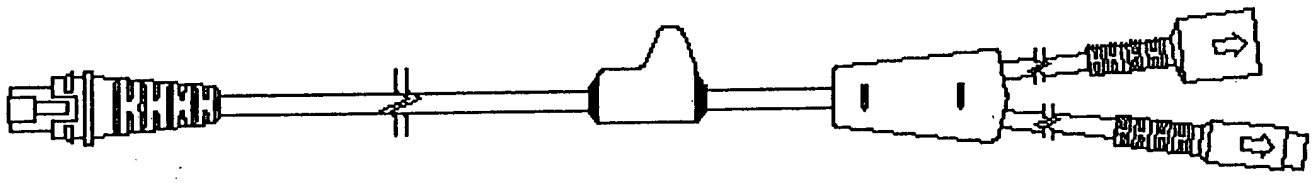
FIG. 9A



10-Pin Connector (RS-232)	
Pin	**Function**
1	Ground
2	RS-232 Transmit Output
3	RS-232 Receive Input
4	RTS Output
5	CTS Input
6	DTR Input
7	No Connection
8	No Connection
9	+5VDC
10	Shield Ground

RS-232 Cable Connector	
Pin	**Function**
1	Shield Ground
2	RS-232 Transmit Output
3	RS-232 Receive Input
4	DTR Input
5	Power/Signal Ground
6	Light Pen Data
7	CTS Input
8	RTS Output
9	+5VDC*

FIG. 9B



10-Pin Connector (KBW)	
Pin	**Function**
1	Ground
2	No Connection
3	No Connection
4	PC DATA
5	PC CLOCK
6	KB CLOCK
7	+5V DC
8	KB DATA
9	V_EXT
10	No Connection

5-pin Female DIN	
Pin	**Function**
1	Keyboard Clock
2	Keyboard Data
3	No Connection
4	Power Ground
5	+5 Volts DC

6-pin Male Mini-DIN	
Pin	**Function**
1	PC Data
2	No Connection
3	Power Ground
4	+5 Volts DC
5	PC Clock
6	No Connection

FIG. 9C

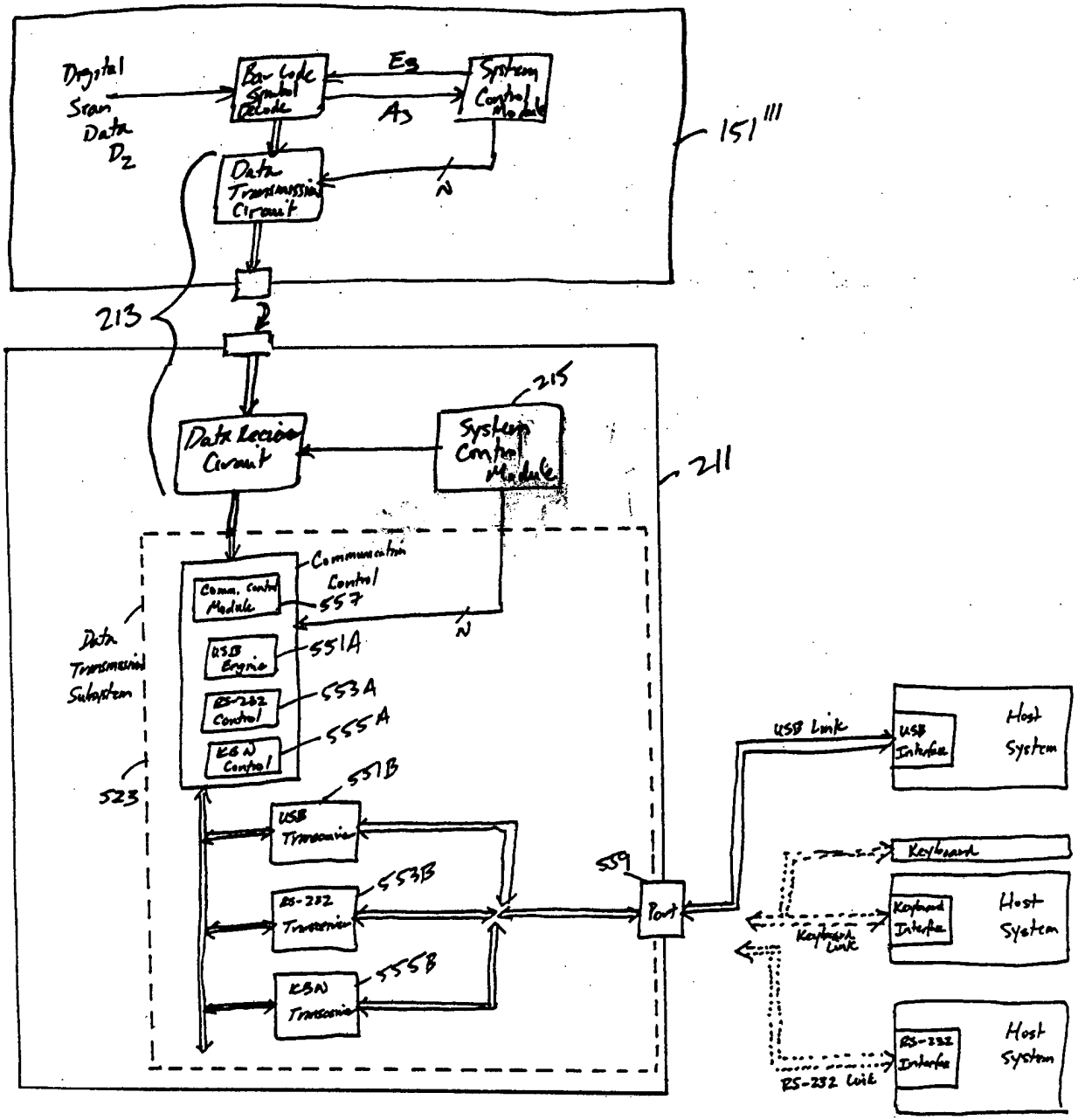

Digital Scan Data D_2
Bar Code Symbol Decode
E_3
A_3
System Control Module
Data Transmission Circuit
N
151'''
213
215
Data Receive Circuit
System Control Module
211
Communication Control
Comm. Control Module
557
N
Data Transmission Subsystem
USB Engine
551A
RS-232 Control
553A
KBW Control
555A
523
551B
USB Transceiver
RS-232 Transceiver
553B
KBW Transceiver
555B
559
Port
USB Link
USB Interface
Host System
Keyboard
Keyboard Interface
Keyboard Link
Host System
RS-232 Interface
RS-232 Link
Host System

Fig. 10A

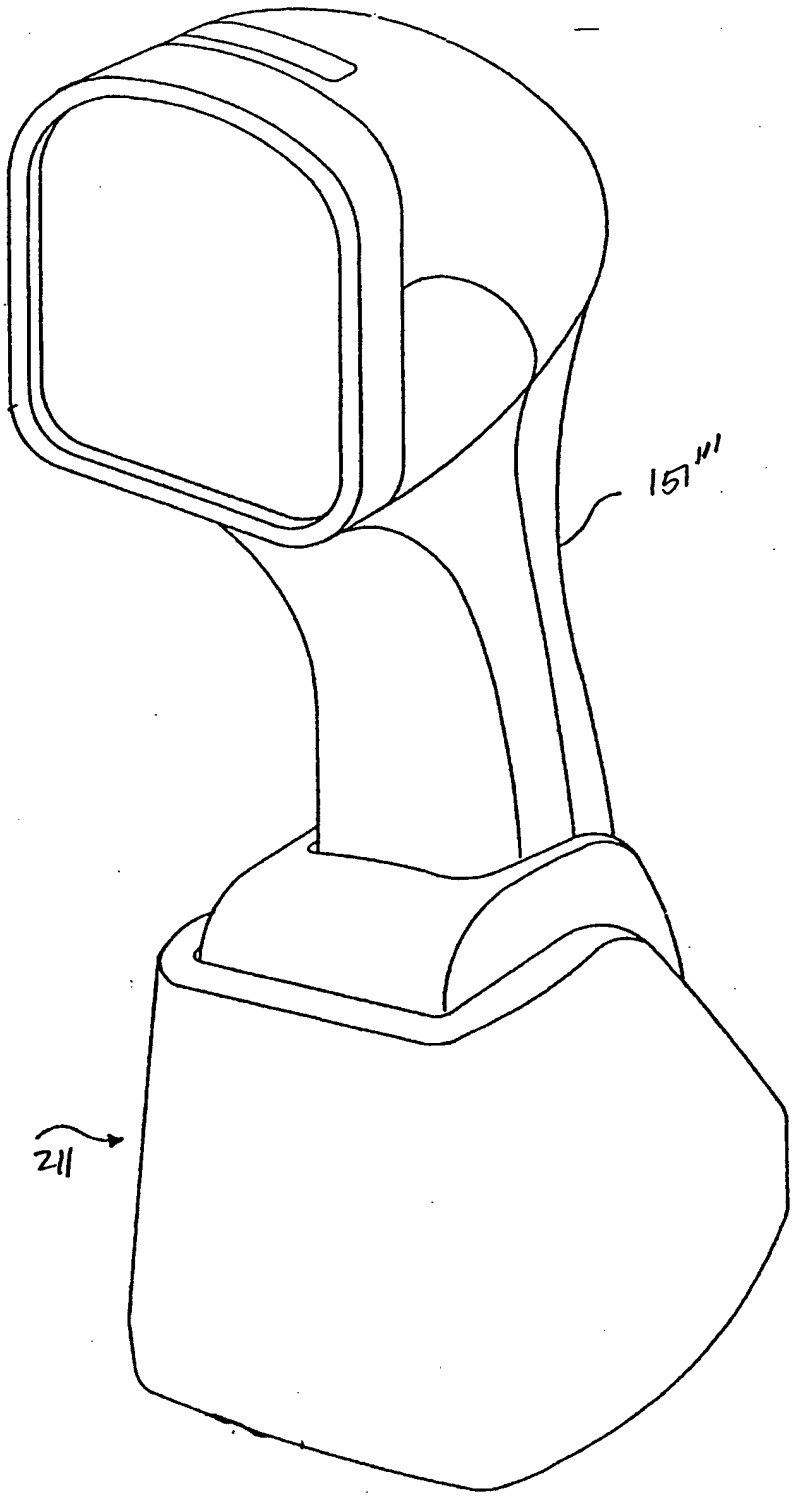


FIG. 10B